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(71) Applicant: **HITACHI, LTD.**
6, Kanda Surugadai 4-chome
Chiyoda-ku, Tokyo 101 (JP)
Applicant: **HITACHI ASAHI ELECTRONICS CO., LTD.**
1, Haruokacho Ikegami
Owariasahi-shi (JP)

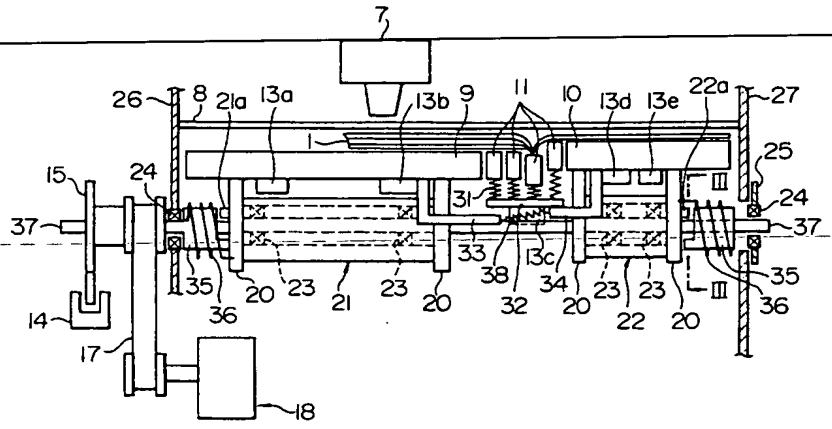
(72) Inventor: **Murakoshi, Minoru**
2773-68, Kitayama,
Obata
Moriyama-ku, Nagoya-shi (JP)
Inventor: **Kato, Akihito**
105, Kitaeno
Enokimaechō, Anjo-shi (JP)

(74) Representative: **Patentanwälte Beetz - Timpe - Siegfried Schmitt-Fumian - Mayr**
Steinsdorfstrasse 10
D-80538 München (DE)

(54) Apparatus for printing a passbook or the like.

(57) This invention relates to an apparatus for printing a passbook or the like in which platens are pressed against vertical stitch passbooks or the like which are different in width, along the back surface to perform printing. A sleeve shaft 37 is rotated by rotation of a motor 18, and eccentric sleeves 20 are rotated through springs 36 from the sleeve shaft 37 so as to press a left platen 9 and a right platen 10, thereby supporting left and right pages of an open passbook 1 or the like. Also, a plurality of divided platens 11 are provided surrounding a stitched portion of the passbook, so that printing can be performed in accordance with the position of the stitched portion which may be changed by a difference in width of passbooks or the like.

FIG. 1



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BACKGROUND OF THE INVENTION

The present invention relates to an apparatus for printing a vertical stitch passbook or the like including a stitched portion and, more particularly, to a printing apparatus of a passbook or the like which can print passbooks or the like which are different in width.

An article to be printed by a conventional printing apparatus of a passbook or the like, (hereinafter referred to as a passbook) is open laterally from its stitched portion. A conventional printing apparatus for the vertical stitched passbook has employed a so-called divided platen type in which left and right pages which are different in thickness are supported by the platens divided at the stitched portion to perform printing. In this type of printing apparatus, as disclosed in, for example, Japanese Patent Unexamined Publication No. 63-179771, a first platen for supporting the left pages, a second platen for supporting the right pages and a third platen for supporting the stitched portion of the passbook are supported by springs, the passbook is disposed on these platens and pressed to a paper guide, the platens are moved to upper and lower positions in accordance with the thickness of the left and right pages of the passbook by means of the springs such that the passbook is held between the platens and the paper guide, and printing of characters and the like is effected in a direction perpendicular to the stitched portion while keeping the gap between the printing surface and a printing head constant.

In the above-described conventional printing apparatus, passbooks or the like which have a certain width and whose stitched portions are at a constant position can be supported by the left and right platens to be printed. However, if a passbook or the like having a different width is printed, a position of its stitched portion differs from the position of the platen for supporting a stitched portion at the fixed position because the passbook is feeded contacting its edge to a paper guide as a reference, which results in a problem that the passbook or the like cannot be normally supported for printing by the left and right platens.

SUMMARY OF THE INVENTION

An object of the present invention is to solve the above-mentioned problem of the conventional technique by providing a printing apparatus of a passbook or the like which can print vertical stitch passbooks or the like having a different thickness in a direction of lines thereof even if the passbooks or the like are different in width.

In order to achieve the foregoing object, an apparatus for printing a passbook or the like according to the present invention has a first characteristic that it comprises a left platen for supporting the back surface of left pages of the vertical stitch passbook or the like, a right platen for supporting the back surface of right pages of the vertical stitch passbook or the like, a plurality of divided platens which are located surrounding the central stitched portion between the left and right pages and which are individually vertically movable, a reference guide on which the left and right pages are pressed by the left, right and divided platens, and a platen driving mechanism which moves the platens vertically to press the pages of the open passbook or the like beneath the reference guide.

Further, the apparatus for printing the passbook or the like according to the present invention has a second characteristic that the platen driving mechanism comprises a sleeve shaft which is rotated by a motor, tension bushes which are secured on the shaft and rotated, a plurality of eccentric sleeves which are twisted by cam springs connected to the tension bushes, and rotated eccentrically with respect to the sleeve shaft, a plurality of first and second platen arms for supporting the left and right platens so that the plurality of eccentric sleeves abut against the left and right platens, and a third platen arm for supporting the divided platens which are raised by upward movement of at least one of the first and second platen arms.

In the printing apparatus of the passbook or the like according to the first characteristic, the platen driving mechanism operates to bring the left and right platens into contact with the reference guide through the passbook or the like in accordance with the thickness of the left and right pages of the open passbook or the like, and those of the plurality of divided platens which correspond to the position of the stitched portion of the passbook or the like are moved vertically, respectively. Thus, passbooks or the like which are different in width can be firmly supported and printed.

In the printing apparatus of the passbook or the like according to the second characteristic, the motor causes the rotational force of the sleeve shaft to be transmitted to the eccentric sleeves through the tension bushes and the cam springs, rotations of the eccentric sleeves cause the left and right platens to press the passbook beneath the paper guide in accordance with the thickness of the pages of the open passbook, and those of the plurality of divided platens which correspond to the position of the stitched portion of the passbook or the like are moved upwardly, respectively. Thus, passbooks or the like which are different in width can be firmly supported and printed by use of a simple mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a cross-sectional view showing a printing mechanism of an apparatus for printing a passbook or the like according to one embodiment of the present invention;

Fig. 2 is a cross-sectional view for explaining the overall structure of the printing apparatus of the passbook or the like according to this embodiment;

Fig. 3 is a diagram showing a cam structure for vertically moving platens in this embodiment;

Fig. 4 is a plan view showing the platens which are vertically moved by the cam structure in this embodiment;

Fig. 5 is a diagram for explaining divided platens corresponding to a stitched portion of a passbook or the like and its support structure shown in Fig. 4; and

Figs. 6 and 7 are diagrams for explaining the respective operations of the platens at stitched portions of wide and narrow passbooks according to this embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

One embodiment of an apparatus for printing a passbook or the like according to the present invention will be hereinafter described in detail with reference to the attached drawings.

〈Description of the Overall Structure and Operation〉

Fig. 2 is a side cross-sectional view showing the printing apparatus of the passbook or the like in this embodiment. The printing apparatus comprises an inserter 2 where a passbook or the like (hereinafter represented by the passbook 1) is inserted and discharged, a plurality of rollers 3 and 4 which rotate to hold and deliver the passbook 1 along a delivery passage 5, platens which press the delivered passbook 1 upwardly against a reference guide 8 so as to maintain a constant gap between a printing surface of the passbook 1 and a printing head 7, eccentric sleeves 20 which rotate eccentrically in synchronism with rotation of a motor 18, platen arms 13 which swing around a rod 16 to support the platens elastically, the printing head 7 for printing the passbook 1 which is provided at a position above the platens, and a control unit 6 for controlling these component parts. With this structure, when the passbook 1 is inserted from the inserter 2, the rollers 3 and 4 deliver the passbook 1 along the delivery passage 5 to a printing position, and the platens which are supported by the platen arms 13 are pressed against the rear surface of the passbook 1 by eccentric rotation of the eccentric sleeve 20 in response to rotation of the motor 18, so that the passbook 1 is opened and held by the reference guide 8 and the platens in accordance with the thickness of the open pages and the configuration of the spine of the stitched portion, and that the printing head 7 prints the passbook 1 in this state.

〈Description of the Platen Portion〉

The printing apparatus of the passbook or the like in this embodiment has been schematically described above. The structure and the operation of the platens will now be described more specifically with reference to Figs. 1, 3 and the succeeding drawings. Fig. 1 is a cross-sectional view taken along the line I-I of Fig. 2, showing the passbook 1 in an open state which has been delivered to a printing position below the reference guide 8, as viewed from the insertion side.

The platen portion comprises a left platen 9 pressed upwardly against left pages of the open passbook 1 which are thick, a right platen 10 pressed upwardly against right pages of the open passbook 1 which are relatively thin, and a plurality of divided platens 11 located surrounding a stitched portion of the passbook 1. Referring to Fig. 4 which shows the apparatus from above, these platens 9 to 11 are elastically supported by the platen arms 13a to 13e in a direction perpendicular to the rod 16. The platen arms 13a and 13b support the left platen 9, the platen arm 13c supports the plurality of divided platens 11 which are vertically movably provided on a platen bracket 32, and the platen arms 13d and 13e support the right platen 10. The platen bracket 32 on the distal end of the platen arm 13c includes a projection 42 in which a plurality of slots 41 are opened, as shown in Fig. 5. The four divided platens 11 of an inverted U-shaped cross-section, each including a spring 31, are closely fitted on the projection 42 to be vertically movable by means of screw-fasteners 40. Platen stoppers 33 and 34 extending toward a position below the platen bracket 32, as shown in Fig. 4, are secured on the platen arms 13b and 13d, respectively, and the platen stoppers 33 and 34 are connected to each other by a spring 38 (see Fig. 1).

Thus, the platen portion in this embodiment comprises the left platen 9 for supporting the left pages of the open passbook, the right platen 10 for supporting the right pages, and the four divided platens 11 for supporting the stitched portion of the passbook. The divided platens 11 corresponding to the stitched portion are held between the left and right platens 9 and 10 and pressed upwardly by the platen stoppers 33 and 34 while the platens draw each other through the spring 38. Also, each

of the platens is designed to be vertically movable in accordance with the thickness of the pages of the open passbook, the position and the height of the stitched portion.

〈Description of the Platen Driving Mechanism〉

As shown in Fig. 1, a mechanism for driving the above-described platen portion comprises an elongated bar-like sleeve shaft 37 both ends of which are rotatably received in side frames 26 and 27 through bearings 24, cylindrical eccentric shafts 21 and 22 through which the sleeve shaft 37 penetrates, each of the eccentric shafts 21 and 22 including the eccentric sleeves 20 which are secured on both ends and bearings 23 located at eccentric positions and being passed through by the sleeve shaft 37, cut elements 21a and 22a (see Fig. 3) fixed on the respective outer eccentric sleeves 20 of the eccentric shafts 21 and 22, tension bushes 35 which press the cut elements 21a and 22a through cam springs 36 by rotating the sleeve shaft 37 so as to exert a certain tension on the eccentric shafts 21 and 22, the motor 18 which transmits the rotational force to the left end of the shaft 37 by way of a timing belt 17, a shielding plate 15 in which a plurality of shielding grooves which rotate in synchronism with rotation of the motor 18 are opened, and a sensor 14 which detects the phases of the eccentric sleeves 20 from the rotation of the shielding plate 15. The cut elements 21a and 22a fixed on the eccentric sleeves 20 are designed to engage with circumferential cut-out edges 35a of the tension bushes 35, as shown in Fig. 3, so that the relative positions of the two members will not rotate over a certain degree to prevent from giving damage on the cam spring.

The platen driving mechanism thus structured operates in the following manner:

(1) In response to rotation of the motor 18, the shaft 37 is rotated for a predetermined angle by the timing belt 17, and consequently, the tension bushes 35 fixed on the shaft 37 are rotated. An angle of this rotation is monitored and controlled by the shielding plate 15 and the sensor 14, and the motor 18 is controlled to maintain the rotation angle.

(2) When the tension bushes 35 are rotated, the rotational forces are transmitted to the eccentric shafts 21 and 22 via the cut-out edges 35a of the tension bushes 35, the cut elements 21a and 22a of the eccentric sleeves 20, and the cam springs 36.

(3) As a result, the eccentric sleeves 20 fixed eccentrically on both sides of the eccentric shafts 21 and 22 are rotated to press the left and right platens 9 and 10 upwardly against forces of retraction springs 12 and raise them up.

Amounts of rotations of the eccentric shafts 21 and 22 at this time are flexibly determined by charge forces of the cam springs 36 in addition to a rotation amount of the shaft 37. In the embodiment shown in Fig. 1, when sheets of paper have a certain thickness like the left pages of the open passbook, a rotation amount of the eccentric shaft 21 is determined by the rotation amount of the shaft 37 and also by a slight amount of rotation of the cam spring 36 until it is stopped by the reference guide 8. When sheets of paper have a less thickness like the right pages of the open passbook, a rotation amount of the eccentric shaft 22 is determined by the rotation amount of the shaft 37 and also by a large amount of rotation of the cam spring 36 until the top surface of the right pages of the open passbook are pressed against the reference guide 8. That is to say, in this embodiment, the eccentric sleeves 20 are rotated by pressures between the cut-out edges 35a and the cut elements 21a, 22a caused by rotation of the sleeve shaft 37 and also by the charge forces of the cam springs 36, and the passbook is elastically supported in accordance with its thickness by the charge forces of the springs 36.

(4) The plurality of divided platens 11 corresponding to the position of the stitched portion of the passbook are raised when the platen bracket 32 of the divided platens 11 is lifted upwardly by the platen stopper 34 or 33 of the right or left platen 10 or 9. Some of the divided platens 11 corresponding to the position of the stitched portion of the passbook are pressed downwardly against forces of the springs 31 whereas the other divided platens 11 are raised in accordance with a condition of the stitched portion of the passbook. The spring 38 generates forces to draw the left, right and divided platens 9 to 11 to each other so that the platens have no gaps therebetween to prevent entrance of the wire of the printing head 7.

In Figs. 1 and 4, the platens and the other members are illustrated with gaps therebetween to facilitate understanding. In fact, these members are disposed to have almost no gaps as not to let a print wire stick in.

Thus, in the platen portion and the driving mechanism according to this embodiment, the eccentric sleeves 20 are rotated by transmitting the rotational force of the shaft 37 and the charge forces of the cam springs 36 to the eccentric shafts 21 and 22 through the tension bushes 35 and the cam springs 36, so that the left platen 9 or the right platen 10 continues to be raised up by rotation of

the eccentric sleeves 20 until it is stopped by the reference guide 8. In other words, this mechanism is arranged in such a manner that when the upward movement of the platen 9 or 10 is stopped by the reference guide 8, the charge force is absorbed by elasticity of the cam spring 36 so that the mechanism performs upward movements of the platens 9 to 11 along the stitch of the passbook. Especially, in the platen portion and the driving mechanism according to this embodiment, the divided platens 11 corresponding to the position of the stitched portion of the passbook are provided in plural, and therefore, even if the position of the stitched portion is changed due to a difference in the width of the passbook, the divided platens 11 can function in accordance with the changed position of the stitched portion.

In the platen portion and the driving mechanism according to this embodiment, minute control of parallelism of the platens 9 to 11 can be performed by an attachment position of a bush 25 of the right-end bearing 24 which supports one end of the sleeve shaft 37. Further, the eccentric sleeves 20 provided on both ends of the eccentric shafts 21 and 22 are designed to be closely fitted on and detached from the eccentric shafts 21 and 22 at every predetermined angle, and in accordance with the kind of the passbook or the like to be printed, minute control of a raising amount of the passbook or the like can be performed by changing beforehand an angle of the phase with respect to the platens.

〈Description of the Overall Operation〉

The operation of the printing apparatus of the passbook or the like according to this embodiment will be hereinafter described.

First, the passbook 1 is inserted from the inserter 2 shown in Fig. 2. While it is delivered to a position below the printing head 7, the motor 18 is not driven, and the platens 9 to 11 are retained at lower positions. When a sensor (not shown) detects that the passbook 1 has been delivered to the predetermined printing position, the control unit 6 functions to transmit rotation of the motor 18 to the sleeve shaft 37 while monitoring the rotation by means of the shielding plate 15 and the sensor 14, and starts rotating the tension bushes 35 and maintains the predetermined phase angle.

The tension bushes 35 transmit not only the rotational force of the shaft 37 but also the charge forces of the cam springs 36 to the eccentric shafts 21 and 22, and the eccentric sleeves 20 provided on both sides of the eccentric shafts 21 and 22 are rotated to press the left and right platens 9 and 10 upwardly. In response to the upward movements of the left and right platens 9 and 10, the platen stopper 33 or 34 of the platen 9 or 10 raises the platen bracket 32 of the divided platens 11 upwardly, and consequently, the plurality of divided platens 11 are also moved upwardly to be pressed against the stitched portion of the passbook 1.

If the left pages of the open passbook 1 are thick, as shown in Fig. 1, the left pages are pressed against the reference guide 8. In this case, when the upward movement of the left platen 9 is stopped, the charge force of the cam spring 36 is elastically absorbed to keep the left platen 9 pressing the passbook 1 against the reference guide 8 at a certain pressure. On the other hand, the right platen 10 is further raised by the rotational force of the shaft 37 and the charge force of the cam spring 36, and is kept pressing the right pages of the open passbook 1 against the reference guide 8 at a certain pressure in substantially the same manner as the left platen 9. Also, the plurality of divided platens 11 are raised in response to the upward movement of the platen stopper 33 or 34. Some of the divided platens 11 are brought into contact with the stitched portion of the passbook 1, and these divided platens alone are stopped from moving upwardly, to thereby press the passbook 1 against the reference guide 8 in accordance with the configuration of the stitched portion.

In this manner, in the printing apparatus of the passbook or the like according to this embodiment, the eccentric sleeves 20 are rotated by the rotational force of the sleeve shaft 37 and the charge forces of the cam springs 36, and the platens 9 to 11 are raised until they are stopped by the reference guide 8, so that the platens 9 to 11 can be pressed against the passbook 1 along its back surface. Moreover, since the plurality of divided platens 11 are located surrounding the stitched portion of the passbook 1, various kinds of passbooks which are different in width can be printed while maintaining a constant gap between the printing surface and the printing head.

〈Description of the Platen Operation for Passbooks or the Like having Various Widths〉

Next, the operation of platens for various kinds of passbooks which are different in width will be described with reference to Figs. 6 and 7. In the following description, the divided platens 11 will be individually referred to as divided platens 11a to 11d in order to facilitate understanding.

In the case of a passbook 1 having a large width, as shown in Fig. 6, the printing apparatus or the like according to this embodiment operates in such a manner that the right end portion of the delivered passbook 1 is positioned by the side frame 27, and consequently, a stitched portion 1a of the passbook 1 is located on the leftmost di-

vided platen 11a. In this case, the spring 31 of the leftmost divided platen 11a is contracted by a pressure from the stitched portion 1a so as to bring the leftmost platen 11a to the same level as the left platen 9, whereas the other divided platens 11b to 11d are raised by the springs 31 to a level for supporting the right pages of the open passbook 1 together with the right platen 10. In the case of a passbook 1 having a small width, as shown in Fig. 7, the printing apparatus of the passbook or the like according to this embodiment operates in such a manner that a stitched portion 1a of the passbook 1 is located on the divided platen 11d, and consequently, the springs 31 of all the divided platens 11a to 11d are contracted by pressures from the stitched portion 1a and the left pages of the open passbook 1, so that the divided platens 11a to 11d are brought to the same level as the left platen 9, and that only the right platen 10 is at a level for supporting the right pages.

In this manner, in the printing apparatus of the passbook or the like according to this embodiment, the divided platens 11 are provided in plural for supporting the stitched portion of the passbook. Therefore, the back surface of the passbook whose stitched portion is located in a range of a width L of the divided platens 11 can be pressed in accordance with the thickness of the pages and the position of the stitched portion, so that passbooks which are different in width can be pressed on the reference guide in parallel, to thereby perform a predetermined printing operation. Further, since the divided platens do not move upwardly from the left or right platens, the divided platens will not be protruded from the left or right platens. Therefore, the printing head wire can be prevented from being broken or from opening holes in the passbook during the printing operation. At the time of retraction of the platens, the divided platens are retracted in substantially the same manner as the left or right platens, which results in the effect that the divided platens will not be a delivery resistance when the passbook is drawn inside. Moreover, the printing apparatus of the passbook or the like according to the present invention can reliably print not only the above-described passbooks but also cut forms and horizontal stitched passbooks by raising and lowering the platens.

Needless to say, the conventional platen driving mechanism with a solenoid and the like can be likewise applied to the present invention.

As has been described heretofore, according to the present invention, the platen means surrounding the stitched portion of the vertical stitch passbook or the like is divided into a plurality of sections so that printed media such as vertical stitch passbooks which are different in width can be printed efficiently and reliably without complex control. Further, the platen driving mechanism transmits the rotational force of the sleeve shaft to the eccentric sleeves through the tension bushes and the cam springs. By eccentric rotations of the eccentric sleeves, the left and right platens are pressed in accordance with the thickness of pages of the open passbook, and the left and right platens are brought into contact with the reference guide through the passbook. Also, among the plurality of divided platens 11, the ones which correspond to the position of the stitched portion of the passbook are selectively raised, and consequently, passbooks or the like which are different in width can be supported and printed reliably with a simple mechanism.

Claims

1. An apparatus for printing a passbook or the like in which the back surface of the vertical stitch passbook (1) or the like including a stitched portion is supported by a plurality of platens (9, 10, 11) to perform printing,
characterized in that
said apparatus comprises a left platen (9) for supporting the back surface of left pages of the vertical stitch passbook or the like, a right platen (10) for supporting the back surface of right pages of the vertical stitch passbook or the like, a plurality of divided platens (11) which are located surrounding the central stitched portion between said left and right pages and which are individually vertically movable, a reference guide (8) on which the left and right pages are pressed by the left, right and divided platens (9, 10, 11), and a platen driving mechanism which moves the platens (9, 10, 11) vertically to bring the pages of the open passbook (1) or the like into contact with said reference guide (8), said platen driving mechanism operates to bring the left and right platens (9, 10) into contact with the reference guide (8) through the passbook (1) or the like in accordance with the thickness of the left and right pages of the open passbook (1) or the like, and those of the plurality of divided platens (11) which correspond to the position of the stitched portion of the passbook or the like are moved vertically.

2. An apparatus for printing a passbook or the like according to claim 1, wherein
said platen driving mechanism comprises a sleeve shaft (37) which is rotated by a motor (18), tension bushes (35) which are secured on said shaft (37) and rotated, a plurality of eccenctric sleeves (21, 22) which are pressed by cam springs (36) connected to said tension

bushes (35), and rotated eccentrically with respect to said sleeve shaft (37), a plurality of first platen arms (13a, 13b, 13d, 13e) for supporting said left and right platens (9, 10) so that said plurality of eccentric sleeves (21, 22) abut against said left and right platens (9, 10), and a second platen arm (13c) for supporting the divided platens (11) which are raised by upward movement of at least one of said first platen arms (13a, 13b, 13d, 13e), rotation of said motor (14) causes the rotational force of said sleeve shaft (37) to be transmitted to said eccentric sleeves (21, 22) through the tension bushes (35) and the cam springs (36), eccentric rotations of said eccentric sleeves (21, 22) cause the left and right platens (9, 10) to be pressed in accordance with the thickness of the pages of the open passbook (1) or the like and to be brought into contact with said reference guide (8) through the passbook (1) or the like, and those of the plurality of divided platens (11) which correspond to the position of the stitched portion of the passbook (1) or the like are moved upwardly.

FIG. 1

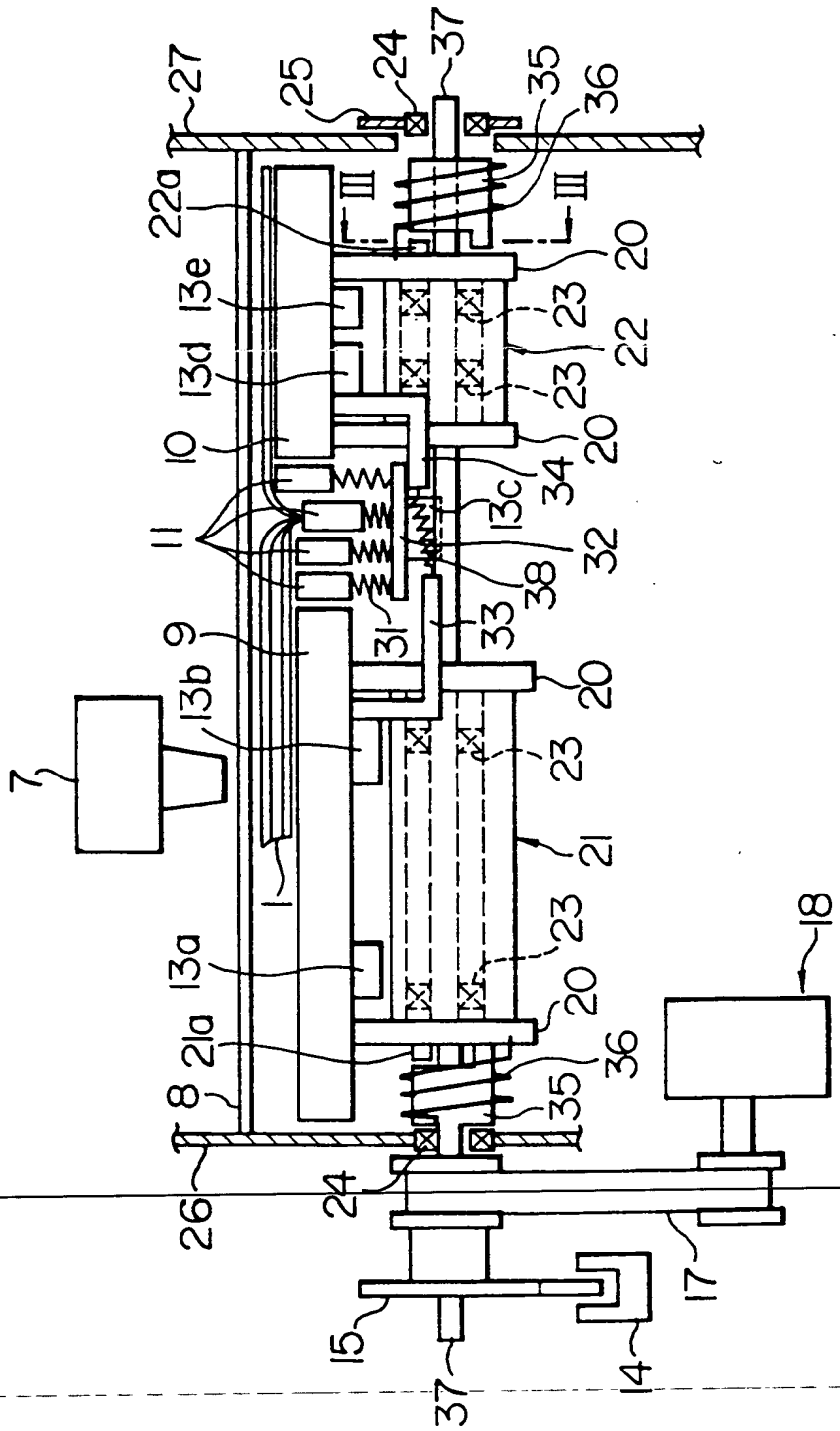
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FIG. 2

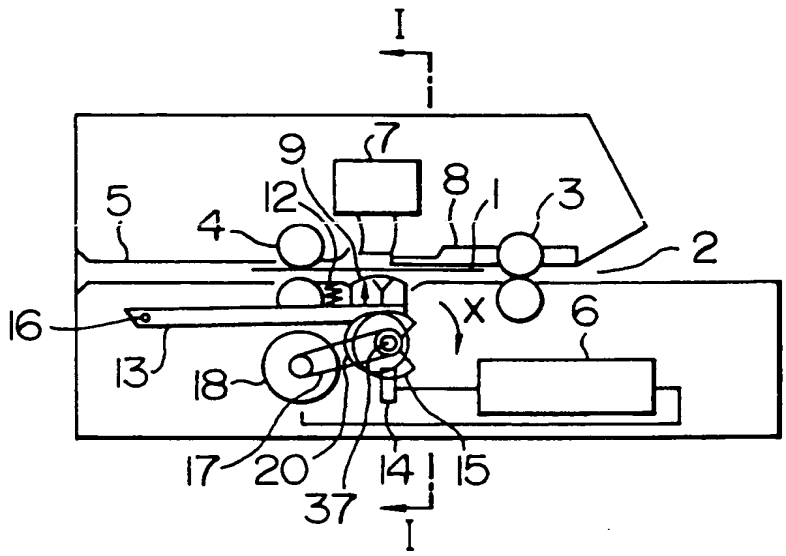

FIG. 3

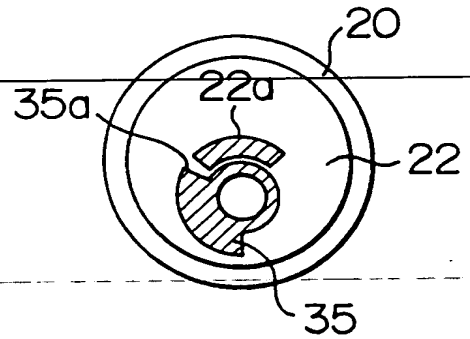

FIG. 4

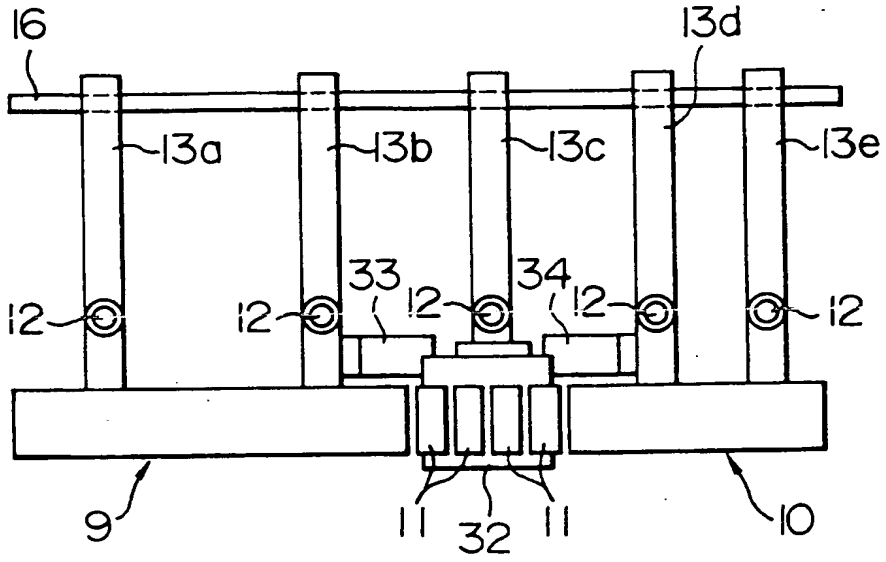
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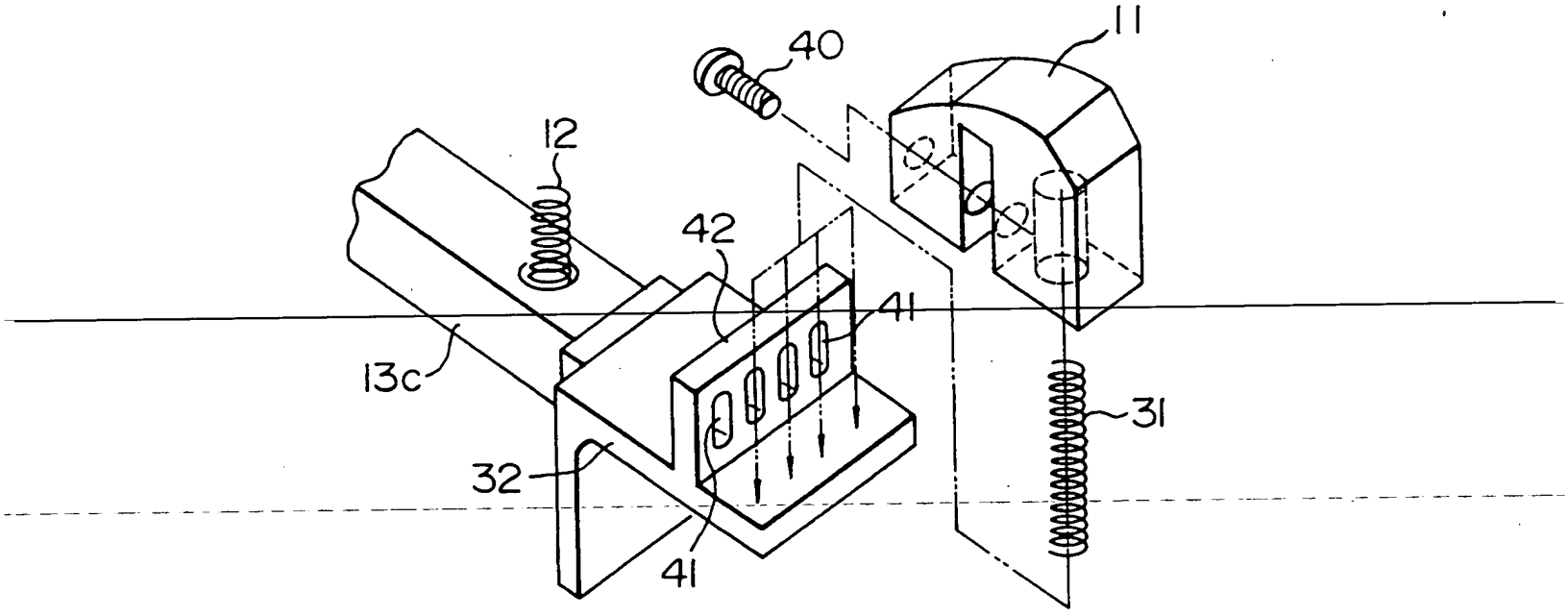
FIG. 5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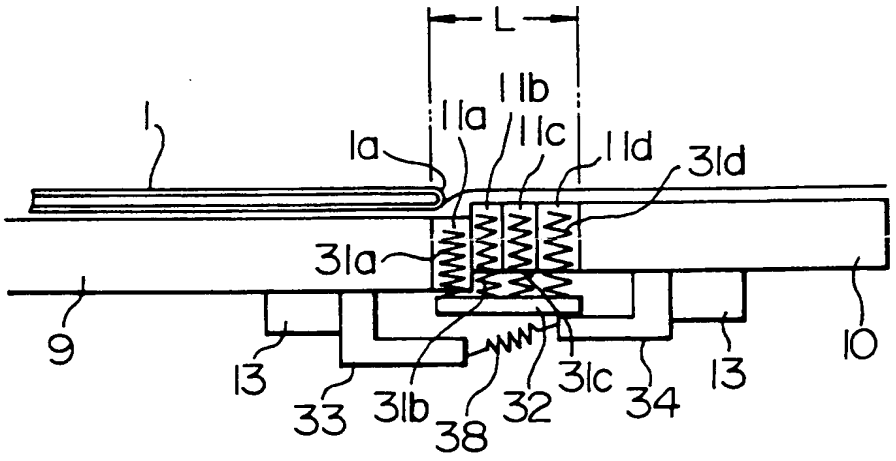
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11b
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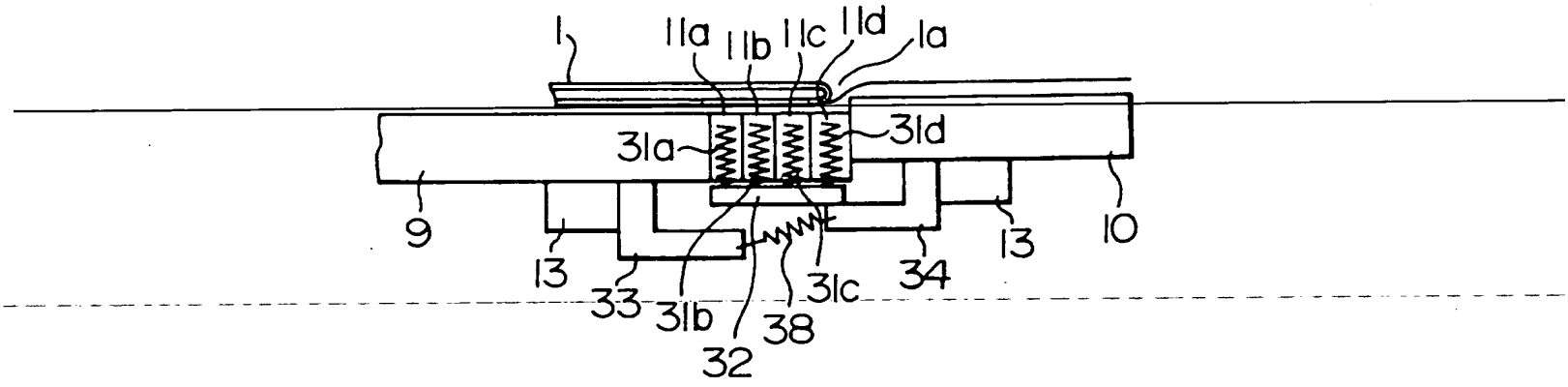
FIG. 7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(71) Applicant: **HITACHI, LTD.**
6, Kanda Surugadai 4-chome
Chiyoda-ku,
Tokyo 101 (JP)
Applicant: **HITACHI ASAHI ELECTRONICS CO., LTD.**
1, Haruokacho Ikegami
Owariasahi-shi (JP)

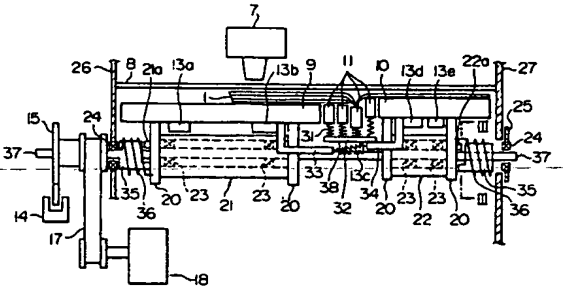
(72) Inventor: **Murakoshi, Minoru**
2773-68, Kitayama,
Obata
Moriyama-ku,
Nagoya-shi (JP)
Inventor: **Kato, Akihito**
105, Kitaeno
Enokimaecho,
Anjo-shi (JP)

(74) Representative: **Patentanwälte Beetz - Timpe - Siegfried Schmitt-Fumian - Mayr**
Steinsdorfstrasse 10
D-80538 München (DE)

(54) Apparatus for printing a passbook or the like.

(57) This invention relates to an apparatus for printing a passbook or the like in which platens are pressed against vertical stitch passbooks or the like which are different in width, along the back surface to perform printing. A sleeve shaft 37 is rotated by rotation of a motor 18, and eccentric sleeves 20 are rotated through springs 36 from the sleeve shaft 37 so as to press a left platen 9 and a right platen 10, thereby supporting left and right pages of an open passbook 1 or the like. Also, a plurality of divided platens 11 are provided surrounding a stitched portion of the passbook, so that printing can be performed in accordance with the position of the stitched portion which may be changed by a difference in width of passbooks or the like.

FIG. 1



EP 0 611 658 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 10 2405

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	DE-A-25 35 136 (CITIZEN WATCH CO.) * page 27, line 15 - page 29, line 9; figures 7,8 *	1	B41J11/20
A	* page 7, line 25 - page 11, line 6; figures 1,2 *	2	
X	DE-A-31 47 170 (SIEMENS AG) * page 5, line 21 - page 7, line 25; figures 1,2 *	1	
A	DE-A-18 00 261 (PHILIPS ELECTROLOGICA) * page 3, line 14 - page 6, line 27; figures 1,2 *	1,2	
A	US-A-4 184 780 (KURIHARA ET AL.) * column 2, line 63 - column 3, line 39; figures 3,5 *	1,2	
D,A	PATENT ABSTRACTS OF JAPAN vol. 12, no. 448 (M-768) (3295) 24 November 1988 & JP-A-63 179 771 (HITACHI LTD) 23 July 1988 * abstract *	1	TECHNICAL FIELDS SEARCHED (Int.Cl.5) B41J
A	PATENT ABSTRACTS OF JAPAN vol. 17, no. 74 (M-1366) 15 February 1993 & JP-A-04 275 164 (HITACHI LTD) 30 September 1992 * abstract *	1	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21 November 1994	De Groot, R

CATEGORY OF CITED DOCUMENTS

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